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## THE WAR AND INTEREST RATES

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During the early months of the great war, there was a widespread belief among economists that the war would cause an early advance in interest rates in the United States, and that the level of interest rates would tend upward during the continuance of the war. This judgment appeared to have the support of both sound theory and historic precedent.

Let us consider briefly the theoretical and historical basis for this judgment, review the actual movement of interest rates during the period of the war, and attempt to give some explanation of this movement. This is a large program for a twenty-minute talk and I can only hope to discuss briefly the more important points.

It is a fact of elementary economics that the market rate of interest consists of three elements: (1) pure interest, (2) an item representing insurance against estimated risk, and (3) an item representing administrative expenses incurred in connection with the making and carrying out of the loan contract. A time of a great world war is a time when one would expect all three of these elements in the interest rate to advance.

### *Pure Interest*

The rate of pure interest is the rate of agio or premium, expressed in terms of a percentage of the capital sum, which represents the market preference for capital today over an assured right to the same amount of capital with value unimpaired at some future date. One would have a close approximation to pure interest in the case of a bond issued by a strong government, having a small debt, if the bond were sold without commission or any other administrative charge, were payable in a currency whose purchasing power was absolutely stable, and were saleable in the market, or otherwise convertible, at any time, without expense, at par and accrued interest.

Certainly the rate of pure interest would be expected to advance during the progress of a great war. The movements of the rate of pure interest, like those of every other price, are the resultants of the interaction of demand and supply; in this case the demand for capital and the supply of capital. When the demand

for capital for present-day needs is large and the supply relatively small, the public is willing to sacrifice the future for the present and the strong time preference for present capital registers itself in a high rate of interest; and, vice versa, when the demands of the present are fairly well met the future looms larger and a lower rate of time preference for present capital as compared with future capital registers itself in a lower interest rate. The days of the greatest war in history were days when the public in belligerent countries and in countries of benevolent neutrality as well were willing to exploit heavily the economic future in order to provide an abundance of present military supplies so as to win the war quickly with a minimum sacrifice of human life. To do this the world was exploiting its natural resources and driving its economic machinery at rates never known before. The war's demands were preemptory, and the meeting of them promptly was imperative. To that end, from the economic point of view, the present was the all-important time; the future was secondary. This meant an overwhelming emphasis upon present goods as contrasted with future goods—present goods that were conducive to the winning of the war. It meant also that those goods must be produced under heavy handicaps. Millions and tens of millions of the world's most efficient men were taken to the front, and the world's labor supply was greatly curtailed. Business was disorganized by a reduced and changing labor force, and by a shifting of economic demands. The world was destroying capital at an unprecedented rate; the building of new capital equipment, except that demanded for the destructive purposes of war, was practically suspended. A time of war was no time to tie up labor and capital in new equipment whose usufructs would come chiefly in the after-war future. Even the maintenance of existing equipment not needed for war purposes was to a substantial extent sacrificed. All this would be expected to result in a large premium upon present goods over future goods, in a large and increasing demand for capital in the face of a declining or relatively declining supply. This is the stuff out of which high rates of pure interest are made.

### *Insurance*

The second element in the market rate of interest is the factor of insurance against risk of loss. Securities that pay high rates of interest proverbially involve large risks. The high rates are neces-

sary to tempt the public to purchase securities whose purchase in the judgment of the market involves a substantial risk of loss. This insurance factor is also an element in the interest rate in the case of debts payable in a currency which gives prospect of decreasing rapidly in value during the period of the loan contract. The insurance element in the market rate of interest, like the pure interest element, one would expect a great war to increase. Belligerent countries were extending their credit to the limit and depleting their resources both material and human. Neutral countries were in danger of being dragged into the struggle at any time. The outcome of the war was uncertain almost to the last, and the imposition of heavy indemnities upon the defeated nations was ever in prospect. Governmental breakdown with resulting anarchy in some at least of the belligerent countries was an ever present possibility. As public debts grew, the danger of ultimate repudiation was more frequently thought of, while paper money of rapidly increasing quantity depreciated materially in terms of gold in most of the belligerent countries. The percentage of gold reserve to circulating credit declined rapidly in all belligerent countries. While in all these respects conditions were much better in the United States than in Europe, we could not escape being greatly influenced by these European conditions, even before we entered the war. A breakdown of the credit of either England or France, or the military defeat of the Allies, would have had serious consequences, as regards credit conditions, in the United States. After we entered the war, we began piling up our own public debt at unheard of rates. All this meant that as the war progressed the insurance element in interest rates, both in government debt and in corporate and private debt, would have been expected to be an element of increasing weight.

#### *Administrative Expense*

The third element in the interest rate, namely, a charge to cover administrative expense, is a minor one and may be passed over in a few words. Every grade of money lender from the pawnbroker to the large banker has his overhead and his current running expenses to meet. The interest rate paid by the borrower must exceed pure interest and insurance by enough reasonably to cover these expenses, or the business will not be carried on. This administrative expense element in the interest rate is negligible in the case of the government debt, for the public here are the lenders

and the lending is made possible without appreciable expense to the lender. In the case of loans, however, by concerns which make the lending of money their business, such as banks, the element of administrative expense would be expected to rise during a great war. At such a time the overhead expenses of banks are likely to increase. The demand for men for war activities depletes and disorganizes their administrative and clerical force and pushes up wages, while the great demand for war supplies is likely to force up the prices of many of the material supplies used by banks.

Summarizing the theoretical argument, we may then say that there are usually three component elements in a market rate of interest—pure interest, a premium to cover insurance against risk, and a price to cover administrative expenses; and that a great war would be expected to set into operation forces that would push up each of these elements and therefore market rates of interest themselves, of which these elements are the constituent parts.

### *The Evidence of History*

History knows of no war of the magnitude of the one through which the world has just passed. Most of the great wars of history, moreover, occurred before the development of well organized money markets, international in their scope of operation. By reason of its magnitude, its duration, its recent date, and of the financial records it has made available, probably the American Civil War offers the best field for a study of an historical precedent as to the effects of a great war upon interest rates. The American figures for the Civil War, however, are somewhat vitiated as a basis for comparison with the American figures in the recent war by the fact that they represent for the most part interest rates on loans floated during a period when the currency was greatly depreciated in terms of the gold and silver legal units of value, and when the insurance element was a rapidly fluctuating one, due to the ups and downs of the Union cause.<sup>1</sup> A more trust-

<sup>1</sup> The yearly average rate of interest in New York during the period 1860-66 were as follows:

Date	60 day paper	Prime two-named 60 day paper
1860	8.4	7.7
1861	9.0	6.6
1862	6.8	5.4
1863	6.7	5.8
1864	9.3	8.0
1865	10.2	8.2
1866	7.8	6.3

worthy historical basis of comparison for a study of American interest rates in the recent war would probably be London Bank of England rates during the Civil War. In the case of London rates we have rates for a neutral gold standard country which are comparable with the rates in the United States, which was a gold standard country throughout the recent war and a neutral country for about 63 per cent of that war.

The following table and chart show the movement of Bank of England minimum rates of discount by quarterly periods for the years 1860-1865.<sup>2</sup>

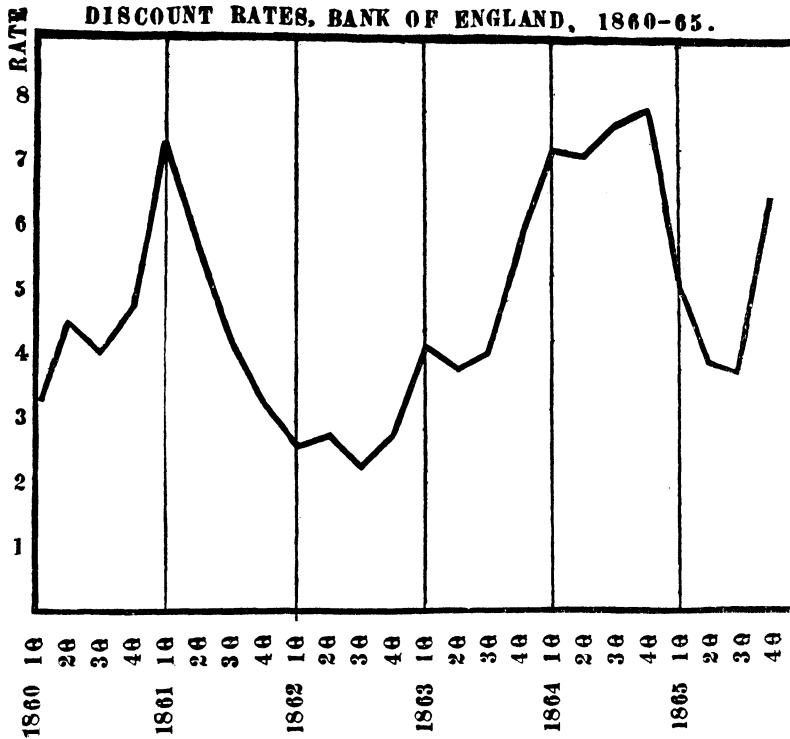
MINIMUM OFFICIAL DISCOUNT RATES OF BANK OF ENGLAND, QUARTERLY PERIODS, 1860-65					
(Rates weighted according to number of days in operation)					
1860	(1)	3.20	1863	(1)	4.10
	(2)	4.45		(2)	3.75
	(3)	4.00		(3)	4.00
	(4)	4.70		(4)	5.80
Year		4.10	Year		4.40
1861	(1)	7.30	1864	(1)	7.20
	(2)	5.65		(2)	7.10
	(3)	4.15		(3)	7.60
	(4)	3.20		(4)	7.85
Year		5.08	Year		7.45
1862	(1)	2.55	1865	(1)	5.05
	(2)	2.70		(2)	3.85
	(3)	2.20		(3)	3.70
	(4)	2.70		(4)	6.50
Year		2.55	Year		4.75
	1866	7			
	1867	2 1/2			
	1868	2 1/4			
	1869	3 1/4			
	1870	3 1/8			

The figures show a downward tendency throughout 1861 and the first quarter of 1862, and then a general upward tendency until the end of 1864, reaching a maximum of 7.85 per cent for the last quarter of 1864, followed by a steady decline until the last quarter of 1865.

#### *Interest Rates in the United States 1913-18*

Let us now turn to the movement of interest rates in the United States during the recent war, bearing in mind the important fact that throughout the war the gold standard was maintained and all

<sup>2</sup> Figures are weighted according to the number of days each rate was in operation. They were computed from the data given by the report of the Royal Commission of the depression of trade and industry in its first report in 1886 (C — 4621, p. 161).



kinds of money and deposits in solvent banks were maintained, with slight qualification,<sup>3</sup> at par with gold. The movement of American interest rates by quarterly periods for the years 1913 to 1918 is shown in the following table<sup>4</sup> and chart:

<sup>3</sup> During the latter days of the war it was reported that a small premium on gold appeared in California.

<sup>4</sup> Figures for call rates, 60 to 90 day, two-name commercial paper rates, and 6 months' time loans were computed from data given in the *Financial Review* and the *Commercial and Financial Chronicle*. Figures for long term rates are the average yields on ten high grade investment railroad bonds. The bonds selected are those used by Wesley C. Mitchell in his "American Security Prices and Interest Rates" (*Jour. Pol. Econ.*, XXIV [1916], pp. 126-157) and are as follows: A. T. & Sf. Adj. 4's of 1895; C. R. R. of N. J. Gen. Mortg. 5's of 1887; C. & O., 1st consol. mortg. gold 5's of 1939; C. B. & Q., Neb. ext. 4's of 1927; C. M. & St. Paul, genl. mortg., series A., 4's of 1889; C. St. Paul, M. & O., consol. 6's of 1930; N. Y. C. & St. L., 1st mortg. gold 4's of 1937; Penn. consol. gold 4's of 1948; Reading genl. gold 4's of 1897; West Shore 1st mortg., Gt. by N. Y. Cent., 4's of 2361.

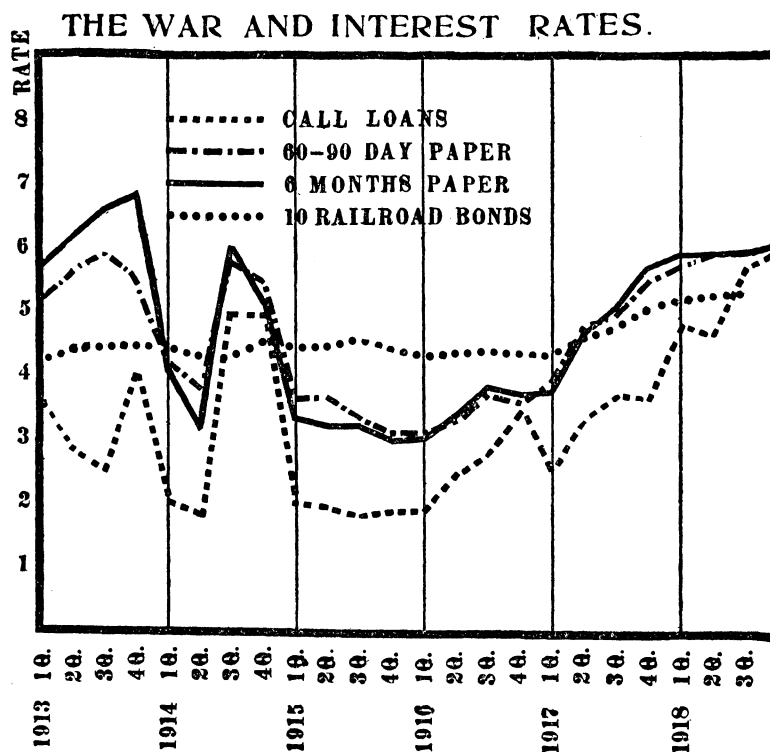
Mitchell found it necessary to make certain adjustments in computing the

TABLE SHOWING MOVEMENT OF AMERICAN INTEREST RATES BY QUARTERLY PERIODS, 1913-1918

Period	Call	60-90 two-name paper	6 mos. paper	West Shore 4's	10 Ry. Bonds
1913					
1 quarter	3.58	5.20	5.75	4.10	4.22
2 "	2.81	5.59	6.15	4.25	4.37
3 "	2.47	5.95	6.58	4.25	4.42
4 "	4.02	5.64	6.31	4.35	4.43
year	3.22	5.60	6.20	4.20	4.36
1914					
1 quarter	2.02	4.19	4.05	4.30	4.43
2 "	1.82	3.81	3.17	4.30	4.30
3 "	4.97	5.78	6.03	4.30	4.28
4 "	4.93	5.45	5.16	4.50	4.53
year	3.43	4.84	4.59	4.35	4.36
1915					
1 quarter	2.01	3.66	3.35	4.40	4.45
2 "	1.96	3.68	3.23	4.40	4.45
3 "	1.81	3.36	3.23	4.50	4.57
4 "	1.88	3.11	2.98	4.40	4.41
year	1.91	3.44	3.19	4.45	4.47
1916					
1 quarter	1.89	3.12	3.01	4.35	4.32
2 "	2.45	3.28	3.38	4.40	4.35
3 "	2.75	3.70	3.82	4.45	4.38
4 "	3.39	3.58	3.70	4.35	4.33
year	2.62	3.42	3.47	4.40	4.35
1917					
1 quarter	2.53	3.89	3.73	4.40	4.32
2 "	3.30	4.73	4.62	4.60	4.58
3 "	3.66	4.91	5.04	4.90	4.73
4 "	3.60	5.44	5.68	5.00	5.05
year	3.27	4.75	4.77	4.70	4.67
1918					
1 quarter	4.73	5.70	5.88	5.10	5.17
2 "	4.59	5.88	5.88	5.25	5.24
3 "	5.64	5.91	5.93	5.55	5.29
Oct. to Nov.	5.88	6.00	6.00		
year	5.21	5.87	5.92		

average yield of his bonds for the years succeeding 1912 in order to make the figures comparable with his figures for earlier years. Inasmuch as comparisons with years prior to 1913 are not needed for the purposes of the present study, these adjustments of Mitchell's needed to be eliminated. I have accordingly recomputed the figures eliminating Mitchell's adjustments and bringing the figures down to date. See Wesley C. Mitchell, "Amer. Secur. Prices and Int. Rates," in *Journal of Political Economy*, XXIV (1916), p. 143.





A reference to the chart reveals three striking facts. They are: (1) Aside from a sharp advance during the early months of the war—a time when comparatively few loans were made and comparatively few securities sold, because the New York Stock Exchange bond market was closed four months (July 30 to November 28)—and aside from an equally sharp decline toward the end of the year 1914, all rates ruled comparatively low until about the end of 1916. (2) About the beginning of 1917 all rates began a pronounced upward movement which continued until the end of the war, or until they were practically pegged by the operation of the New York Money Committee.<sup>5</sup> (3) Rates on call loans, on

<sup>5</sup> This Money Committee was a subcommittee of the Liberty Loan General Committee of New York and was appointed September 5, 1917, "for the purpose of securing the most complete coöperation with the government in its financial program by all the financial interest of the city." Under the leadership of this committee many of the larger banks of the city in coöperation with the Federal Reserve Bank adopted a policy of practically rationing the money market, and by means of funds at the disposal of the coöperating banks, practically pegged short-time interest rates in the neighborhood of 6 per cent from the beginning of 1918 until the end of the war.

60 to 90 days' commercial paper, and on 6 months' paper ruled exceptionally low during 1915 and 1916, and at levels much below the average rate of yield on railroad bonds.

The chief reason why rates on call loans and loans of short maturities ruled so much lower than the rates of yield on railroad bonds, was, I believe, the desire of the money-lending public to keep control of its funds. These were times of great uncertainty, both economic and military. No one knew what big things a day might bring forth. The thinking public, moreover, in general expected the war to bring substantial and continual advances in interest rates. Under such circumstances the public naturally did not wish to tie up its funds in long time maturities.

#### *Interest Rates Advance in 1917 and 1918*

Advances in interest rates during 1917 and 1918 would naturally have been expected under the operation of the economic forces previously described. Of course these forces were greatly accentuated when the United States came into the war and when we began our tremendous war expenditures, accompanied by our large flotation of liberty bonds. The surprising thing is not that interest rates rose substantially in 1917 and 1918, but that their rise was postponed until such a late date.

#### *Explanation of Low Interest Rates during 1915 and 1916*

How can the prevalence of such low interest rates throughout 1915 and 1916 be explained? The chief answers to this question, I believe, are two-fold: (1) that the low market rates of 1915-1916 are largely attributable to the great money and deposit currency inflation which the country was experiencing at that time; and (2) that the rates on long-time securities were low only nominally and will prove to be actually high rates camouflaged by inflation. Let us consider these two propositions in their order.

#### *Low Interest Rate of 1915-1916 Largely Attributable to Inflation*

An interest rate from one point of view is a rental price for capital expressed in terms of a percentage of the capital value rented. Money, and deposit credit giving the right to draw money on demand, are forms of capital. They are distinctive in respect to the fact that nearly all transfers of capital goods are effected through their mediation. The result is that the public think of capital continually in terms of money, and they reason

that to increase one's supply of money is synonymous with increasing one's supply of capital. From such reasoning the conclusion is a natural one that a government in great need of military supplies for carrying on a war will be able to obtain them roughly in proportion as it is able to obtain possession of this important intermediary good, namely, money; and that the lower the interest rate at which it is able to borrow this money the lighter will be the financial burden imposed upon the public by the war.

Building upon premises like these, the logical policy to have pursued in the United States would have been something as follows: (1) to encourage the importation of gold into the country and to place an embargo on its exportation; (2) to discourage the circulation of gold within the country and to impound the gold so far as possible in the vaults of the federal reserve banks, where as a reserve for federal reserve notes and a reserve for reserve deposits of member banks it would have its maximum efficiency as regards the amount of circulating credit it could support; (3) to encourage the banks to extend credit freely to the government by the purchase of certificates of indebtedness and liberty bonds; and (4) to encourage the banks to loan freely to the public on the security of liberty bonds so that the public might buy the maximum amount of bonds and turn over to the government the maximum amount of money and deposit credit; (5) to assist the banks in carrying out this program by reducing their legal reserve requirements and by lending to them freely through the federal reserve banks at rates of interest low and profitable to the banks and on the security of paper collateralized by the government debt; (6) to leave government funds so far as possible on deposit with commercial banks so as to avoid credit contraction and, to that end, to excuse banks from holding legal reserves against government deposits.

Now all of these measures, and others of a similar character, are in fact to be found in the financial program followed by the government during the war period. What actual economic philosophy was back of these measures in the minds of those responsible for them it is of course impossible to say. In many cases it was probably not the naïve economic philosophy above described, for accompanying this program there were some vigorous and wholesome efforts on the part of many in high official position to induce the public to speed up production, economize consumption,

and reduce the absorption of labor and capital in non-essential or less essential industries. None the less, in the main, the government's loan, currency, and bank-credit policies resulted in making capital in the form of money and deposit credit plentiful and in thereby holding down the interest rates.

These results were accentuated by the facts: (1) that belligerent Europe had much to buy of us during the war and little to sell to us except securities and gold, leading to a net importation of about a billion dollars of gold into the United States during the period of the war; and, (2) that the establishment of our federal reserve system in the early days of the war greatly improved our currency and banking mechanism, making each dollar in active circulation and each dollar in bank reserve much more efficient than ever before, in other words, enabling each dollar to do a greatly increased amount of money work. This in its effect was the same as a further great increase in the supply of currency and circulating credit.

Under such influences, while the country's physical volume of business increased about 12 per cent from 1913 to 1917, its supply of money in circulation increased 45 per cent, its bank deposits (exclusive of savings banks deposits and deposits of one bank in another) increased 74 per cent,<sup>6</sup> and the rate of deposit currency circulation, according to Irving Fisher,<sup>7</sup> increased from 54.0 to 92.4 or 71 per cent.

These developments and devices were all forces that tended to hold interest rates down; but they were likewise forces that led to great expansion of currency and deposit credit and thereby tended to push prices up. They were largely responsible for the tremendous advance in the price level which has taken place since 1913, an advance which measured in terms of wholesale prices means a cutting in half of the purchasing power of the dollar.

We bought our low interest rates at the price of very high prices; we kept interest rates down by pushing price levels up. The government was enabled to borrow at low interest rates partly, it is true, by capitalizing patriotism, but partly also by policies

<sup>6</sup> For detailed figures upon this subject see E. W. Kemmerer, "Inflation" in *American Economic Review*, June 1918, p. 247, et. seq.; also report of the War Finance Committee of the American Economic Association, December, 1918, pp. 93-114.

<sup>7</sup> See Irving Fisher, "The Equation of Exchange for 1914 and the War" in *American Economic Review*, June, 1915, chart facing page 1; and December, 1918, p. 871.

which led to tremendous inflation. The latter forces, but not the former, also directly held down interest rates for corporate and individual borrowers. Both the government and the public paid lower nominal rates of interest than they otherwise would have paid, by reason of this situation; but it does not follow that they will pay lower *amounts* of interest, for the very policies that kept interest rates down pushed prices up and the borrower was accordingly compelled to pay higher prices and thereby borrow larger sums of money than he otherwise would to buy the same supply of goods.

This brings me to my last point, namely, that the low rates of interest on long-time securities will probably prove to be actually high rates before the obligations are paid. The government has been borrowing dollars of low purchasing power; likewise have the few corporations that have floated long-time bonds during the war period. If the dollar of 1913 is called a 100 per cent dollar, that of today, in terms of purchasing power over commodities at wholesale, is less than a 50 per cent dollar. If the next few years witness a gradual deflation of our currency and credit, as most economists expect, and the purchasing power of the dollar rises, the debtors will be required to pay their debts—principal and interest—in more valuable dollars than they borrowed. This agio in the value of the dollar they will repay over the value of the dollar they borrowed will be part of the interest rate, but they will not recognize it as such. It is likely to make the actual or purchasing power interest rates on long-time loans, floated during the war period, very high ones.

In conclusion, let me say with emphasis that in what has been said I am neither condemning nor approving the government's low-interest, inflationary, war-finance policy. It has had its advantages and disadvantages. For the United States it probably succeeded better during a nineteen months' war than it would have succeeded during a longer one. Today, however, my purpose is not to appraise but to explain.